Patent claims

1. Viral particles released after infection of mammalian cells by human cytomegalovirus (HCMV), characterized

a) in that the particles are surrounded by a lipid membrane in which viral glycoproteins are embedded,

b) in that the particles contain neither viral DNA nor capsids,

c) in that the particles contain a fusion protein comprising one or more parts of the T-cell antigen pp65 (UL83) and one or more parts of one or more proteins which are not pp65.

2. Particles as claimed in claim 1, characterized in that the T-cell antigen pp65 (UL83) is fused to one or more parts of an HCMV glycoprotein.

3. Particles as claimed in claim 1, characterized in that the T-cell antigen pp65 (UL83) is fused to one or more parts of the HCMV glycoprotein gB.

4. Particles as claimed in claim 1, characterized in that the T-cell antigen pp65 (UL83) is fused to one or more parts of the HCMV glycoprotein gH.

5. Particles as claimed in claim 1, characterized in that the T-cell antigen pp65 (UL83) is fused to one or more parts of the HCMV protein IE1 (ppUL123).

6. Particles as claimed in claim 1, characterized in that the T-cell antigen pp65 (UL83) is fused to one or more parts of an HCMV glycoprotein and to one or more parts of the HCMV protein IE1 (ppUL123).

7. Particles as claimed in claim 1, characterized in that the T-cell antigen pp65 (UL83) is fused to one or more parts of a protein which is part of a human pathogen other than HCMV.

8. Particles as claimed in claim 7, characterized in that cytotoxic T lymphocytes (CTL) are formed in humans against the protein which is part of a human pathogen other than HCMV on natural infection with the pathogen.

9. Particles as claimed in claim 8, characterized in that the other human pathogen which is not HCMV is selected from the group comprising HIV-1, HBV, HCV and influenza.

10. Particles as claimed in claim 8, characterized in that the fusion protein comprises at least one epitope of a protein of the other human pathogen, neutralizing antibodies against the epitope being formed in humans on infection, and at least one other epitope of a protein of the other human pathogen, CTL against the other epitope being formed in humans on infection.

11. Particles as claimed in any of claims 1 to 9, characterized in that the fusion protein comprises at least one epitope against which neutralizing antibodies are formed in humans on infection, and at least one other epitope against which CTL are formed in humans on infection, the epitopes being derived from proteins of the same pathogen.

12. Viral particles released after infection of mammalian cells by HCMV, characterized

a) in that the particles are surrounded by a lipid membrane in which viral glycoproteins are embedded,

b) in that the particles contain neither viral DNA nor capsids,

c) in that the particles contain parts of at least 2 glycoproteins which are variants of a particular glycoprotein from different HCMV strains.

13. Particles as claimed in claim 12, characterized in that one of the 2 variants of the particular HCMV glycoprotein is the variant of the HCMV Towne strain and the other is the variant of the HCMV Ad169 strain.

14. Particles as claimed in claim 12, characterized in that the glycoprotein is the gB protein of HCMV.

15. A method for replicating HCMV which comprises the following steps:

a) provision of an HCMV in whose genome an essential gene has been deleted,

b) provision of a stably transfected mammalian cell line which expresses the HCMV gene deleted in a),

c) replication of the deleted virus from a) in cells from b).

16. The method as claimed in claim 15, characterized in that human foreskin fibroblasts are transfected in step b).

17. The method as claimed in claim 15, characterized in that the mammalian cells are transfected with the aid of a lipid-containing reagent.

18. The method as claimed in claim 15, characterized in that the mammalian cells are transfected by the "Fugene" reagent.

19. The method as claimed in claim 15, characterized in that the HCMV in step a) harbors a deletion in the gene of the major capsid protein (UL86).

20. A method for producing viral particles which comprises the following steps:

a) provision of HCMV as set forth in any of claims 15-19

b) infection of mammalian cells with virus which has been replicated as in step a)

c) isolation of viral particles from cells which have been infected as in step b), where

α) the particles are surrounded by a lipid membrane in which viral glycoproteins are embedded,

β) the particles contain neither viral DNA nor capsids.

21. The use of viral particles released after infection of mammalian cells by human cytomegalovirus (HCMV) as vaccine, characterized

a) in that the particles are surrounded by a lipid membrane in which viral glycoproteins are embedded,

b) in that the particles contain neither viral DNA nor capsids.

22. The use as claimed in claim 21, characterized in that the viral particles additionally contain a fusion protein comprising one or more parts of the T-cell antigen pp65 (UL83) and one or more parts of one or more proteins which are not pp65.

23. The use as claimed in claim 21, characterized in that the particles contain parts of at least 2 glycoproteins which are variants of a particular glycoprotein from different HCMV strains.

24. The use as claimed in claim 21, characterized in that the viral particles have been produced by a method as claimed in claim 20.